PROVINCIAL ADVISORY COMMITTEE FOR INDIAN STUDENTS,

CALCUTTA.

ADMISSION

TO

AMERICAN UNIVERSITIES AND COLLEGES.

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for Indian Students, Calcutta.

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INTRODUCTORY NOTE.

THE following notes have been compiled chiefly from Calendars, Announcements and Reports of the various American Universities. Books describing the American Educational System, Colleges and Universities have also been drawn upon. As far as possible, the wording of these authorities has been deliberately adhered to in the interests of accuracy. The references on the margin will, it is believed, be found useful to those who require further information. The notes have been kindly revised by Dr. Segard of the Young Men's Christian Association, Professor Nag of the Presidency College, and by other Graduates of American Universities.

It is proposed to submit this first sketch of the subject treated to American experts on educational matters for suggestion and correction. Additional Chapters, too, are being written which will be ultimately incorporated with the present publication. It is hoped, by these means, to make these pages more useful to the very large number of Indian students who require information about the American educational system.

METHODS OF ADMISSION.

The different ways in which admission can be obtained to American Colleges and Universities might be thus described :—

(A) Under-Graduate students are admitted—

(1) Upon examination (*a*) at the particular University or College which they desire to enter, or (*b*) by the College Entrance Examination Board (*see* pages 19-23).

(2) Upon Certificate (*see* pages 23-24).

(3) With advance standing (*see* pages 24-25).

(4) As special student (*see* page 25).

(B) Admission may be to the Graduate School (*see* page 25).

The Committees on admission for different Universities are also authorised to admit students without examination to pursue specific courses, always provided that the men admitted are acceptable to the instructors concerned as competent for the courses they enter. Such students are registered as non-collegiate students. Such non-matriculated students may not be regarded as candidates for a degree, certificate, or diploma. but they may receive a formal statement as to their records. These students are expected to conform to the same standards of attendance and scholarship as are required of matriculated students.

ENTRANCE REQUIREMENTS.

For admission to the Under-Graduate course, whichever of the first three methods is adopted, the applicant must satisfy the special requirements of his particular institution in the matter both of his subjects and of his attainments in them.

S. P. Capen's "Opportunities for foreign students at Colleges and Universities in the United States," p. 60.

In old days American Colleges opened their portals to a candidate only on condition that he had studied certain prescribed text-books, the place of honour being given to the Classics. To-day, it has been remarked, some few Universities seem to have reached the other extreme in that they admit any one who has passed out of a High School of recognised standing. Both these extremes, however, are exemplified only by a few Universities and "the great mass is at present pursuing a mediate course." It is assumed that the entrance requirements of the College and Universities can only be satisfied by one who has gone through four years' course at

Dexter's "History of Education in the United States," pp. 287-288

The Unit.

a High School. Some common measure was, however, obviously required of the work done in diverse subjects at various institutions. The four years' course at a Secondary School is thus taken to represent sixteen units or half-credits; and the Colleges and Universities are thus enabled to measure and state their requirements for entrance in terms of such units. "A unit represents a year's study in any subject constituting approximately a quarter of a full year's work." Consequently the four years' work at a Secondary School represents 16 units of work. The Indian student can understand this method all the better since he is accustomed not only to measure his chief monetary unit but also many other magnitudes by the number of annas in the rupee. Some further manipulation of the unit is, however, necessary, for the same value cannot be assigned to an hour's work in the class, in a laboratory, and in vocational work, as compared with an hour's lecture work. Moreover, a further element of difficulty is introduced into the problem by the fact that a subject may be taught in different Secondary Schools for three, four, or five hours a week. This complexity of circumstances is met by rules like the following:—"A unit equals five recitations a week for one year of at least 36 weeks in one branch of study. Two laboratory periods in any science or vocational study are considered as equivalent to one class exercise. In closely allied branches not usually taught in periods of one year each, such as Physiology and Zoology, units may be constructed by adding the respective time values of such studies. Three recitations a week for a year and a half may be counted as one unit Half units are accepted in subjects like Botany, Zoology, Trigonometry, etc.

Capen, p. 59. Educational Guide, p. 19

Wisconsin Announcements, 1916-17, p. 89.

Number of units required.

Most standard Colleges and Universities require for admission from 14 to 16 units. Thus, Columbia wants 15 units, Harvard 16½ units of school work, Chicago 15 units, and Wisconsin 14 units.

Chicago Circular of Information, 1917, p. 97. Harvard University Catalogue 1915-16, p. 509.

Elective and Prescribed units.

Of these 14 to 16 units some are prescribed or compulsory, while others are elective or voluntary. Thus at Harvard a certain number of units are prescribed in English, Foreign Languages, History, Mathematics and Science; and the candidate has to choose sufficient additional subjects from a list to make up the total of 16½ units. At Yale University the prescribed subjects are English, Latin, French or German,

Harvard Catalogue, 1915-16, p. 509. Capen, p. 133.

Algebra, Plane Geometry ; and four additional subjects are to be selected by the candidate to cover the 16 units. At Cornell University out of 15 units 11 are prescribed, including English, Foreign Languages, History and Mathematics. At Columbia out of 14 units, 9½ are prescribed (3 English, 2½ Mathematics, 4 Latin). *Provision is generally made both against undue specialisation and against shallow studies leading to a mere smattering of a subject.* Thus candidates are not allowed to offer too many units in one subject. The opposite danger is guarded against by not allowing a candidate to take too few units of any subject. For admission to some departments of an institution Foreign Languages are compulsory, and for those who want to take a technical course, say leading up to a B. Chem. degree, an extra number of units in Mathematics or Science might be prescribed.

Such being the method of measuring preliminary educational attainments in America, the Indian student should take care to collect a complete record of his work at School or College before applying for admission to American institutions. He must procure a full syllabus of each of the subjects he has studied in India with an estimate of the number of hours he has worked in each subject. He should get it certified by the Principal of the institution in which he has studied and by the Registrar of his University or by the Divisional Inspector of Schools or by the Director of Public Instruction. He must study the Foreign Language required if he wants to join a department or institution where that subject is necessary. He should also take with him, if he is a student of technical subjects, his laboratory note-book and drawings properly indexed with the certification of his teacher, because he will have to submit them at the time of his Entrance Examination. Above all he should study thoroughly the entrance requirements of the institution which he wants to join, and for this purpose should procure the bulletins and announcements published by the institution or obtain them through the Secretary of the Provincial Advisory Committee.

It is imperative that the student from India should know something about the equipment of the American students with whom he will have to work and the "pre-requisites" of his College course.

Typical High School curriculum.

In order to understand fully the admission requirements to American Colleges it is necessary to consider the curriculum of the High School in the United States. A typical High School

curriculum might be adopted from Monroe's "Principles of Secondary Education":—

High School Curriculum in City of medium size.

I.—Ancient Classical Course.

First year—
- Latin.
- Ancient History.
- English.
- Algebra.

Second year—
- Latin.
- Greek.
- English.
- Geometry.

Third year—
- Latin.
- Greek.
- English.
- Physics.

Fourth year—
- Latin.
- Greek.
- English.
- (Elective).

II.—Modern Language Course.

First year—
- German.
- Ancient History.
- English.
- Algebra.

Second year—
- German.
- Medieval History.
- English.
- Geometry.

Third year—
- French (or Spanish).
- American History and Government.
- English.
- (Elective).

Fourth year—
- American History and Government.
- English.
- (Elective).
- (Elective).

III.—History-English Course.

First year—
- Latin or German.
- Ancient History.
- English.
- Algebra.

Second year—
- Latin or German.
- Medieval History.
- English.
- Geometry.

Third year—
- Modern History.
- English.
- Physics.
- Drawing.

Fourth year—
- American History and Government.
- English.
- (Elective).
- (Elective).

IV.—Scientific Course.

First year—
- German.
- Botany.
- English.
- Algebra.

Second year—
- German.
- Zoology.
- English.
- Geometry.

Third year—
- Physics.
- Drawing.
- Trigonometry.
- (Elective).

Fourth year—
- Chemistry.
- Drawing.
- American History and Government.
- (Elective).

V.—Business Course.

First year—
- (Any other Course).
- Book-keeping.
- Typewriting.

Second year—
- (Any other Course).

Third year—
- Spanish.
- Business Arithmetic.

Fourth year—
- Spanish.
- Business practice.
- (Commercial Geography).
- (Commercial Law).
- (Shorthand).

General description of Entrance Requirements.

Having thus seen the kind of work which is done in the American High Schools we can come to a general description of subject accepted by Colleges for admission. A very good general idea of the College Entrance Requirements can be obtained from the curricula of the College Entrance Examination Board. The student who would consult these is referred to Mr. Capen's book (pages 60-93). An attempt, however, will be made here to show what is expected by the leading Colleges in the matter of such subjects as the Indian student is likely to take up and to indicate what general text-books are expected to be studied in each subject. We shall have in view mainly the requirements at Harvard, Columbia, and other leading institutions.

I.—English.

1. To begin with English, its study is regarded as having two main objects :—(1) command of correct and clear English, spoken and written ; (2) ability to read with accuracy, intelligence, and appreciation. The first object requires instruction in grammar and composition. The second object is sought by means of two lists of books, headed respectively *Reading* and

Study, from which may be framed a progressive course in literature covering four years.

(*a*) Reading.

The aim of this course is to foster in the student the habit of intelligent reading and to develop a taste for good literature, by giving him a firsthand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from each of which at least two selections are to be made. Group I consists of *Classics in translation.* These comprise the chief narrative episodes in the Old Testament, the Odyssey, Iliad and Aeneid which latter works should be read in English translations of recognised literary excellence. Group II consists of the leading plays of *Shakespeare.* Group III consists of *Prose Fiction.* Here there is a large variety ranging from Malory's Morte d'Arthur, Bunyan's Pilgrim's Progress, Swift's Gulliver's Travels, and from the fiction of Defoe, Goldsmith, Scott, and Jane Austen to the works of Dickens, George Elliot, Kingsley, Reade, Stevenson, Cooper and Poe. Group IV comprises *Essays and Biography.* Here also the range of selection is very wide and covers among other works Addison and Steel's The Sir Roger de Coverley Papers, or selection from the Tatler and Spectator (about 200 pages); Boswell's Selections from the Life of Johnson; Franklin's Autobiography; Irving's Sketch Book; Lockhart's Life of Scott; Thackeray's Lectures on Swift. Addison, and Steele in the English Humorists; Macaulay's Essays; Selection from Ruskin; Lowell's Selected Essays; Holme's The Autocrat of the Breakfast Table; Huxley's Autobiography, and other similar works. Group V consists of *Poetry*, Here the student can have his choice of portions of Palgrave's Golden Treasury and of the works of Goldsmith, Pope, Coleridge, Scott, Macaulay's Ballads, and selections from Tennyson, Browning, Mathew Arnold, Lowell, Longfellow and Whittier.

(*b*) Study.

This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. The books provided for study are arranged in four groups, from each of which one selection is to be made.

Group I. Drama.—Shakespeare's Julius Caesar, Macbeth, Hamlet.

Group II. Poetry.—Milton's L'Allegro, Il Penseroso, and either Comus or Lycidas; Tennyson's The Coming of Arthur, The Holy Grail, and the Passing of Arthur; the selections from Wordsworth, Keats, and Shelley in Book IV of Palgrave's Golden Treasury (First series).

Group III. Oratory—Burke's "Speech on Conciliation with America"; Macaulay's Two Speeches on Copyright, and Lincoln's Speech at Cooper Union; Washington's Farewell Address; and Webster's First Bunker Hill Oration.

Group IV. Essays—Carlyle's "Essay on Burns," with a selection from Burns's poems; Macaulay's "Life of Johnson; Emerson's "Essay on Manners."

Besides these courses in English, Columbia has one unit of advanced study in English. Candidates should have had substantially the same training as that prescribed for Freshmen in English in the College. They will be examined in the principles of effective organisation and expression as set forth in any good text-book of rhetoric and as exemplified in books like Mill's "Subjection of Women," Carlyle's "Past and Present," or Newman's "Literature." *Columbia Bulletin, 1918 19, pp 33-36*

II.—French.

For Elementary and Intermediate French (which between them cover four units) suitable text-books are Daudet, Le Petit Chose; Erckmann-Chatrian, Stories; Halevy, "L'Abbe Constantin"; Labiche et Martin, "Le voyage de M. Perrichon;" Lavisse, "Histoire de France." The student is expected to have read from 250 to 400 pages of easy modern prose stories, plays or historical or biographical sketches. *Columbia Bulletin 1918-19, p. 35. Harvard Catalogue, p. 533.*

There is also one unit of advanced French. The work to be done comprises the reading of from 400 to 600 pages of French of ordinary difficulty, a portion to be in the dramatic form; constant practice in giving French paraphrases, abstracts or reproductions from memory of selected portions of the matter read; the study of a grammar of moderate completeness; writing from dictation. Suitable text-books are: Bazin, "Les Oberle"; Dumas, novels; Merimee, "Colomba"; Sandeau, "Mlle. de la Seigliere"; Tocqueville, "Voyage en Amerique."

III.—History.

Columbia Bulletin, 1918-19, pp 43-45.

The requirements in History are based on the recommendations of the Committee of Seven of the American Historical Association. The subject will cover :—

(*a*) Ancient History, including a brief introductory study of the Oriental peoples, and early medieval history to the death of Charlemagne, with due reference to art, literature, and Government.

(*b*) Medieval and modern history, from the death of Charlemagne to the present time, with due reference to the growth of the State system.

Harvard Catalogue, 1915-16, pp. 538-39.

(*c*) English History, with due reference to social and political development.

(*d*) American History with the elements of Civil Government.

(*e*) Modern England, from the beginning f the sixteenth century, and the British Empire, including the history of the American Colonies.

(*f*) United States History since the Revolution, and American Government.

(*g*) Modern European History from the beginning of the sixteenth century to the present.

Each of the four divisions (*a*), (*b*), (*c*) and (*d*) counts one unit. One or any two of the divisions may be offered by the candidate without any restriction. On examination a candidate must show such general knowledge of the subjects in each division offered as may be acquired from the study of an accurate textbook of not less than 300 pages. Since *the questions will be so framed as to require comparison and the use of judgment rather than mere exercise of memory on the part of the pupil*, it is recommended that the teacher prescribe a course of supplementary reading of not less than 300 pages dealing with the more important periods and events in each division offered. Geographical knowledge will be tested by requiring the location of places, boundaries and movements on an outline map.

For the subject of Elementary History the following textbooks are recommended by some of the Universities :—

Chicago Circular, 1916-17, p. 101.

Botsford's History of Greece and History of Rome ; Myer's Ancient History (revised edition, 1904) ; Breasted and Robinson's Outlines of European History, Volume I. For European History Thatcher and Schwill's The Middle Ages (new edition) ; The History of Modern Europe by the same authors and Bourne's European History. For English History the

student may read Gardiner's Student's History of England, Ransome's History of England, and Cheyney's History of England.

There is also the possibility of the students offering *Advanced History*. Here there are two courses of study as follows :—

(1) English History (open to those candidates only who have offered Ancient, Medieval and Modern European or American History as an elementary study).

(2) American History (open to those candidates only who have offered Ancient Medieval and Modern European or English History as an elementary study).

In every case the candidate will be expected to show on examination such an acquaintance with the whole field as may be gained from the study of good text-books, together with substantial parallel readings and, further, such a detailed knowledge of some part of the field as may be gained from suitable topical study. A higher standard of acquirement and of power to combine results will be expected than in the elementary requirements.

As further evidence of the candidate's proficiency satisfactory *written work, done at school and certified by the teacher, must be submitted at the time of the examination.* It must be presented in the form of a note-book (or bound collection of notes), containing not less than 50 written pages on the historical field offered, and must show practice in some of the following exercises :— *Harvard Catalogue, pp. 538-39.*

(*a*) Notes and digests of the pupil's reading outside of the text-books.

(*b*) Brief written tests requiring the application to new questions of knowledge previously acquired.

(*c*) Parallels between historical characters or periods.

(*d*) Short studies of topics limited in scope, prepared outside of the class-room and illustrated by some reference to contemporary material.

(*e*) Historical maps or charts showing explorations, migrations, conquests, territorial changes, or social conditions.

Some Universities accept one unit of *Industrial History* in the case of students who seek admission to the School of Practical Arts only. The candidate must show such general knowledge of the subject as may be derived from a text-book of the standard represented by Cheyney's Industrial and Social

History of England, together with supplementary reading of not less than 300 pages dealing with the industrial aspects of life of the leading nations of the world as they have contributed to this field.

IV.—Mathematics.

Elementary.

Columbia Bulletin 1918-19, p. 49-50.

(A) Elementary Algebra (counting two units).

(*i*) The four fundamental operations for rational algebraic expressions.

Factoring, determination of highest common factor and lowest common multiple by factoring.

Fractions, including complex fractions, ratio and proportion.

Linear equations, both numerical and literal, containing one or more unknown quantities.

Problems depending on linear equations.

Radicals, including the extraction of the square root of polynomials and of numbers.

Exponents, including the fractional and negative.

(*ii*) Quadratic equations, both numerical and literal—

Simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations.

Problems depending upon quadratic equations.

The binomial theorem for positive integral exponents.

The formulas for the nth term and the sum of the terms of arithmetic and geometric progressions, with applications.

It is assumed that pupils will be required throughout the course to solve numerous problems which involve putting into equations. Some of the problems should be chosen from Mensuration, from Physics, and from Commercial life.

The use of graphical methods and illustrations, particularly in connection with the solution of equations, is also expected.

(C) Plane Geometry (counting one unit).

The usual theorems and constructions of good text-books, including the general properties of plane rectilinear figures ; the circle and the measurement of angles ; similar polygons, regular polygons, and the measurement of the circle.

The solution of numerous original exercises, including loci problems.

Applications to the mensuration of lines and plane surface.

Advanced.

(B) Advanced Algebra—

Permutations and combinations, limited to simple cases.

Complex numbers, with graphical representation of sums and differences.

Determinants, chiefly of the second, third and fourth orders, including the use of minors and the solution of linear equations.

Numerical equations of higher degree, and so much of the theory of equations with graphical methods as is necessary for their treatment, including Descartes' rule of signs and Horner's method, but not Sturm's functions or multiple roots.

(D) Solid Geometry—

The usual theorems and constructions of good text-books, including the relations of planes and line in space ; the properties and measurements of prisms, pyramids, cylinders and cones ; the sphere and the spherical triangle.

The solution of numerous original exercises, including loci problems.

Applications to the mensuration of surfaces and solids.

(F) Plane Trigonometry—

Definitions and relations of the six trigonometric functions as ratios ; circular measurements of angles.

Proofs of principal formulas, in particular for the sine, cosine, and tangent of the sum and the difference of two angles, of the double angle and the half angle, the product expressions for the sum or the difference of two sines or of two cosines, etc., the transformation of trigonometric expressions by means of these formulas.

Solution of trigonometric equations of a simple character.

Theory and use of logarithms (without the introduction of work involving infinite series).

The solution of right and oblique plane triangles and practical applications.

In the Elementary Mathematics will also be included *Modern Commercial and Higher Arithmetic.* The work should include methods of checking the fundamental operations, such as casting out nines, considerable practice in the formal solution of problem, mensuration, ratio and proportion, percentage, commercial discounts and profits, interest, promissory notes, and partial payments. Emphasis should be given to the Arithmetic of Modern Banking, which should include bank discounts and exchange together with a thorough study of checks drafts, deposits, and the clearing house. The questions of domestic and foreign exchange, Government revenues, taxes,

commission and brokerage, stocks and bonds, Life Insurance and Fire Insurance should also be considered.

V.—Chemistry.

The candidate's preparation in Chemistry should include:

Columbia Bulletin, 1918-19, pp. 27-28

(*a*) The study of a standard text-book, to the end that the pupil may gain a comprehensive and connected view of the most important facts and laws of elementary chemistry.

(*b*) Instruction by lecture-table demonstrations to be used mainly as a basis for questioning upon the general principles involved in the pupil's laboratory investigations.

(*c*) Individual laboratory work, comprising at least forty exercises. An indexed note-book of the experiments must be submitted.

The following outline includes only the indispensable things which must be studied in the class room and laboratory. The material is, for the most part, common to all elementary text-books and laboratory manuals. The order of presentation will naturally be determined by each teacher for himself.

Outline.—The chief physical and chemical characteristics, the preparation, and the recognition of the following elements, together with their principal compounds :—*Oxygen*, *hydrogen*, *carbon*, *nitrogen*, *chlorine*, *bromine*, *iodine*, *fluorine*, *sulphur*, phosphorus, silicon, potassium, *sodium*, calcium, magnesium, *zinc*, copper, mercury, silver, aluminium, *lead*, tin, iron, manganese, chromium.

More detailed study should be confined to the italicized elements (as such) and to a restricted list of compounds, such as water, hydrochloric acid, carbon-monoxide, carbon-dioxide, oxides of nitrogen, nitric acid, ammonia sulphur-dioxide, sulphuric acid, hydrogen sulphate, sodium-hydroxide, ammonium hydroxide.

Attention should be given to the atmosphere (constitution and relation to animal and vegetable life), flames, acids, bases, salts, oxidation and reduction, crystallization, combining proportions by weight and volume, calculations founded on these, and Boyle's and Charles' Laws, symbols and nomenclature, atomic and ionization theory, atomic weight, valency (in a very elementary way), nascent state, natural grouping of the elements, solution solvents and solubility of gases and solids and liquids, saturation, strength of acids and bases, conservation and dissipation of energy, chemical energy, electrolysis. Chemical terms should be clearly understood, and the pupil should be able to illustrate and apply the ideas they embody. The theoretical topics are not intended to form separate

subjects of study, but to be taught only so far as is necessary for the correlation and explanation of the experimental facts.

A course in elementary Chemistry as taught in the better class of high and preparatory schools, covering thirty-five to forty weeks, four to five days per week one-third to one-half of the total assignment being devoted to laboratory work, will afford the necessary preparation. Two hours of laboratory work are reckoned as equivalent to one hour of assignment. *Chicago Circular 1916-17, p 109*

Remsen's, Torrey's, Hessler and Smith's, Newell's, Young's, Linebarger's, and Storer and Lindsay's Elementary Chemistries are suitable text-books for preparation. Smith and Hall's Teaching of Chemistry and Physics (Longmans) discusses fully the material and methods approved by the Department.

VI—Physics.

The candidate should be familiar with the elementary principles of physics and some of their practical applications, and should be able to solve simple numerical problems.

The preparation of the candidate should include— *Columbia Bulletin, 1918-19, p 52*

(*a*) The study of one of the standard text-books in use in secondary schools.

(*b*) Instruction by lecture table demonstrations in which the phenomenon of physics are shown and the principle qualitatively illustrated.

(*c*) Individual laboratory work, comprising at least thirty exercises. A suitable selection of experiments may be made from the list published by the College Entrance Examination Board.

A note-book of laboratory exercises must be submitted.

VII.—Botany.

The candidate should have received training by means of laboratory method in—

The structure and the more obvious features of the life history of at least ten types among the higher seed plants chosen from the more representative families (*e.g.* Gramineæ, Liliaceæ, Salicaceæ, Ranunculaceæ, Rosaceæ, Leguminosæ, Cruciferæ, Solanaceæ, Labiatæ, Compositæ). In addition to these, the following types are recommended among the remaining lower groups of plants ; pine, Selaginella, a fern, a moss (*Polytrichum* or *Funaria*), a leafy hepatic—*Marchantia*, a mildew (*Microsphæra*) an agaric, *Vaucheria*, *Spirogyra*, and a protophyte preferably (*Sphærella*). *Columbia Bulletin, 1918-19, p 27.*

Morphology of shoot, root, and seed. This work covers the growth, character, relation, and function of the more important tissues of the stem, leaf, bud, and root, together with a study of the more common variation of these organs. The work on the seed includes the structure and homologies of the principal types, nature of reserve food, the renewal of growth of the seed, and the development of the seedling.

Physiology.—This work should cover the essential facts concerning irritability, protosynthesis, respiration, digestion, growth and reproduction.

Ecology.—The natural history of plants should receive considerable attention, and the behaviour of plants towards environmental factors (especially light and moisture), dissemination, cross and close pollination, and the more important structural and physiological characteristics of plant formations (hydrophytes, halophytes, mesophytes, and xerophytes) should be included.

As evidence of proper laboratory training and of satisfactory work, a note-book must be submitted.

VIII.—Zoology.

Columbia Bulletin, 1918-19, pp 55-56.

Outline for the One-Unit Option in Zoology.—The following outline includes the principles of Zoology which are indispensable to a general survey of the science. It is planned for a full year's course. It is not intended to indicate order of study of the topics—this must be left to the teacher and the text-book.

1. The general natural history—including genera, external structure in relation to adaptations, life histories, geographical range, relations to other plant and animals, and economic relations—of common vertebrates and invertebrates so far as representatives of these groups are obtainable in the locality where the course is given. The types suggested are a mammal, bird, lizard, snake, turtle, newt, frog, dog-fish, or shark, bony fish, clam, snail, starfish, earthworm, planarian, hydra, sea-anemone, paramœcium. In the case of arthropods, pupils should become familiar with common crustaceans, spiders, myriapods, and insects representing at least five orders. Actual examination of common animals with reference to the above points should be supplemented by reading, giving natural history information.

It is not expected that there will be time for making extensive note-books on the natural history work; rather will the work in this line take the form of laboratory demonstrations. So far as time permits, drawings and notes should be made. The note book mentioned below should contain at least drawings on the external structure of four animals not studied

under section 3, preferably two insects, a mollusk, and a second vertebrate.

2. The classification of animals into phyla and leading classes (except the modern subdivisions of the worms) and the great characteristics of the groups. In the case of insects and vertebrates the characteristics of the prominent orders. The teaching of classification should be by practical work, so as to train pupil to recognise animals and to point out the chief taxonomic characteristics. The meaning of species, genera, and large groups should be developed by constructive practical work with representatives of insect or vertebrate orders.

3. The general plan of external and internal structure, not the anatomical minutiæ, of one vertebrate (preferably frog or fish) in general comparison with the human body, an arthropod (preferably a decapod); an annelid (earthworm or Nereis); a cœlenterate (hydroid, hydra, or sea-anemone) a protozoon (a ciliate, and amœba when possible). In place of any of the above types not locally available, there may be substituted a second vertebrate, an insect, a mollusk, or an echinoderm. Tissues, the study of which is recommended as optional, should be examined first with the unaided eye, in such a structure as a frog's leg, and then with a microscope should be demonstrated the relations of cells and intercellular substance in epithelium and cartilage; and, if possible, in other tissues. The functions of the chief tissues and their positions in the body of a vertebrate should be pointed out.

4. (*a*) The general physiology of above types, involving the essentials of digestion, absorption, circulation (respiration), cell-metabolism, secretion, excretion, and nervous functions. This should apply comparatively to the essentials of elementary work in human physiology. Demonstrations and experiments, such as are suggested in high school text-books on human physiology, should be introduced, or recalled if not previously well presented in elementary physiology, in connection with the discussion of the chief functions. As far as practicable, structure and functions should be studied together.

(*b*) Comparison of the general life processes in animals and plants (in connection with the botany if zoology is first studied).

5. The very general features of reproduction of a protozoon (preferably paramœcium); alteration of generation in hydroids; reproduction and regeneration of *Hydra*; the very general external features or embryological development in a fish or frog; and (optional) the general cellular nature (not

centrosomes and the like) of germ cells, fertilization, and cell-division in developing eggs should, as far as possible, be demonstrated and briefly described. Also, the most interesting features of development should be pointed out in the case of other animals studied.

6. The prominent evidences of relationship, suggesting evolution within such groups as the decapods, the insects, and the vertebrates, should be demonstrated. A few facts indicating the struggle for existence, adaptation to environment, variations of individuals, and man's selective influence should be pointed out; but the factors of envolution and the discussion of its theories should not be attempted.

7. (*Optional*). – Some leading facts regarding the epoch-making discoveries of biological history and the careers of such eminent naturalists as Darwin, Huxley, Pasteur, and Agassiz should be presented.

The above outline or a course in general zoology should be developed on the basis of a course of laboratory study guided by definite directions. They should be supplemented by the careful reading of at least one modern elementary text-book in general zoology. At least two-thirds of the time should be devoted to the practical studies of the laboratory. If good nature-studies have not preceded the course in high school zoology, pupils should be encouraged to do supplementary work in the line of natural history. A note-book with carefully labelled outline drawings of the chief structures studied anatomically and the drawings mentioned under natural history (Section 1) and with notes on demonstration and in explanation of drawings, with dates and an index, must be submitted. It will be graded as one-third of the examination.

IX—Biology.

Columbia Bulletin, 1918-19, p. 26

A year's course of not less than five hours per week in second, third, or fourth year of high school. The course should deal with typical animals and plants, with special application to physiological, hygienic, and economic problems of direct human interest. The types of animals and plants are preferably introduced in both half years, whenever they illustrate general principles of biology; but two closely correlated half years in Botany and Zoology, respectively, will be accepted.

The year's course should include the following essentials, which should be taught along the lines specified under Botany and Zoology :—

The general structure, physiology, and development of a typical seed plant, a fern, and one of the unicellular algæ.

The general structure and physiology of molds, yeasts, and bacteria. Their relation to disease and industries. Principles of sanitary science.

The economic relations of prominent examples of the great groups of animals and plants.

The general classification of animals and plants into subkingdoms or phyla, and the chief sub-groups—classes—of seed plants, vertebrates and arthropods

The general life histories of a protozoan, five insects, a fish, an earthworm, a frog, a bird, and a mammal. Also the main ideas of fertilization, external embryonic development and metamorphosis of an amphibian or general embryology of fish or bird.

The general structure of a protozoan, an earthworm, or an arthropod, and a fish, or frog; and comparative study of their functions with reference to application to human biology.

The general structure, physiology, and personal hygiene of the human body.

X.—Drawing.

(a) Freehand.

Columbia University Bulletin, 1918-19, pp. 28-29. Harvard Catalogue, 1915-16, pp 546-47

The candidate's preparation in drawing should be directed towards training him in accurate observation and in definite and truthful representation of form, without attempt to represent color or color values.

The candidate should be able to draw correctly and with lines of good quality simple forms in correct perspective in the size in which they are felt in the plane of the drawing, or larger or smaller. Its recommended that pupils should be taught to draw from the object itself rather than from the flat.

Correctness of proportion and accuracy in the angles and curves, and structural relations of the parts or every object drawn, are of the highest importance. The elementary principles of perspective are to be thoroughly learned, and the candidate should be able to apply them in freehand from the object or from the imagination.

No definite prescription as to method of teaching is made. The examination will test the preparation of the candidate in the following points:—

1. Ability to skecth from the object with reasonable correctness as to proportion, structure, and form. It is recommended that the subjects drawn include simple geometrical objects and simple natural objects such as living plant forms.

2. Ability to sketch freehand from dictation with reasonable accuracy and simple geometrical figures or combination of figures.

3. Ability to represent accurately in perspective a simple geometrical solid of which projection drawings are given, and ability to make consistent projection drawings of a simple geometrical solid of which a perspective representation is given.

4. Ability to answer question in regard to the principles involved in making these drawings.

Every candidate must present at the time of and as part of the examination in drawing a set of freehand drawings executed during one year's course in a preparatory school and within a period of two years before the time of application for admission.

These drawings should be at least twenty in number and should display proficiency in the point mentioned in paragraphs 1, 2 and 3.

Correctness and proportion and accuracy in the angles and curves and structural relations of the parts of every figure or object drawn are of the highest importance, and in laying out the drawings great care should be taken in the use of construction lines and in the drawing of general masses and contour before the details are begun.

A certain proportion of shade drawing from caste may be included, but they are not required and should not form the majority of the drawings submitted.

All drawings should be of uniform size, and fastened together, not rolled.

In case the candidate has not attended a systematic course of instruction as detailed above, he may submit a corresponding set of freehand drawings.

(b) Mechanical.

1. Knowledge of the use of the T-square, triangles, and other drawing instruments, and skill and correct habits in their use.

2. Knowledge of geometric constructions commonly needed in drafting, with accuracy and speed in their use.

3. Orthographic Projection and Isometric Projection.

4. Working drawings of simple objects, with special reference to—

(*a*) Conventional methods of representing sections.

(*b*) Proper methods of showing dimensions.

(*c*) Some standard form of single stroke freehand lettering such as Reinhardt's. Letter should be of a uniform slope, height, and thickness of stroke, well proportioned, well spaced, and well finished.

(*d*) Proper method of putting on the drawing explanatory notes for materials, methods of construction, finish, etc.

We have thus selected the subjects which are most likely to be taken up by an Indian student preparing to join an American College and have indicated their main requirements and, wherever possible the text-books used in America. The student can by this means judge how far he is prepared for his work abroad.

ADMISSION BY EXAMINATION.

As has been mentioned, there are two chief methods of testing the capacity of entrants employed by American Colleges and Universities. The old method is that of an examination of each individual student in all the subjects in which he offers. The second is that of the acceptance by the Colleges of the Diploma of the recognized Secondary School from which the applicant has come as fulfilling all requirements. The former method is adopted by many Eastern institutions; the latter is a later development and is in vogue with most of the Western Colleges and in many of the Eastern Colleges. The High School student in America quite frequently picks out the College and the course for his study several years before he seeks admission. But it is not to be assumed that the two methods are mutually and entirely exclusive. Thus, though Columbia prides itself on being "one of the few American institutions to adhere to the plan of requiring Entrance Examinations for admission to College", it yet requires, besides the examination, evidence of adequate preparation on the subjects required for entrance. The Annual Report of the President of the Columbia University for 1914 states: "Inasmuch as Columbia definitely adopted the plan, some years ago, of becoming familiar with the personality and school record of as many candidates for admission as possible and of giving weight to personality and school records in passing upon the results of the formal admission examination, it has been the aim of the Chairman of the Committee on Under-Graduate Admissions to gain, by personal visits and inspection, as wide and as accurate a knowledge as possible of the work of the various Secondary Schools from which our College students chiefly come. He has done more than this, and has, in a surprisingly large number of cases, been able to gain personal knowledge of the candidates for admission themselves". Such is the zeal shown and the amount of work done for obtaining a high grade of College students and for increasing the spirit of scholarship and devotion to duty.

Dexter, p. 288.

Keppel's "Columbia" p 46.

Old and New Plans of Examinations.

The system of examination might be said to be in a transitional stage and therefore in many Universities there is both an Old Plan and a New Plan of examinations. Thus, at Harvard

we find an Old Plan of examinations in all subjects ; and a New Plan under which there are examinations in English, a Foreign Language, Mathematics or Science, and one other subject. In addition, under the New Plan, there must be Secondary School record showing work in Languages, Science, Mathematics, and History.

Capen, p 159. Harvard Catalogue, p 515.

Gardiner's "Harvard", pp 126-130

The Old Plan was found defective, because it entailed on the public schools the undertaking of a very special kind of preparation for the Harvard University. Although only a few students from each of the public schools would go up to the University, the system had the effect of forcing all students to take up the specialised preparation for the University, whether they wanted to join the latter or not. Hence about 1910 a New Plan of admission was started. This New Plan has been thus described: "It requires the candidate for admission in the first place to show that he is ready to take the examinations by sending a statement of the subjects which he has studied in his High School course with the time given to each subject and his standing in his High School work. If this is found satisfactory by the Committee of Admission the candidate is then admitted to the examination. These are four in number of three hours each and on subjects which are certain to be taught in any good school. The subjects in which the boys are examined are—(1) English, (2) Latin (or for candidates for the degree of S. B., French or German), (3) Mathematics, Physics or Chemistry, (4) any subject not already selected from the following list: Greek, French, German, History, Mathematics, Physics, Chemistry. The examiners who read the books are directed to return not merely a grade, but a statement of the quality of the examination book and its bearing on the fitness of the candidate to study in Harvard."

Harvard Catalogue, 1915-16, p 515

As the New Plan leaves the subjects of the examination less to the choice of the University and more to that of the candidate, the examination under it is very searching. Under the New Plan there is practically nothing corresponding to a mere passing grade under the Old Plan. In those subjects when a candidate chooses for examination, he will be expected to do well. To be admitted under the New Plan a candidate's total record (School record and examination) must be such as to show clearly that he is a desirable student. There will be no counting by subjects under the New Plan nor crediting of separate subjects. A candidate will be admitted to College or will be refused admission.

Gardiner's "Harvard," p 130.

The New Plan has already proved very successful at Harvard and that in many ways: "It has opened the door

of the College to a great number of High Schools widely scattered throughout the country. Furthermore, the record of the first set of men admitted under the New Plan was so far above the average of their class-mates who are admitted under the Old Plan that it seems probable that it is also serving the purpose of bringing to the College a picked set of young men. Other Universities like Princeton and Yale have adopted similar systems." In Columbia a student may be admitted on passing examinations which ordinarily cover 15 entrance units. But there is an alternative plan of admission ; a candidate for admission who has completed with a high degree of proficiency a satisfactory Secondary School course may, at the discretion of the University, receive permission to satisfy the examination requirements for admission by passing Entrance Examinations in not less than four subjects at one and the same series of examinations, the subjects in question to include all those prescribed for admission and the examinations to be the comprehensive examinations given by the College Entrance Examination Board. At Princeton there are also two methods of admission ; the first consisting of examination in all subjects and the second requires for candidates of exceptional ability a Secondary School record and examination in four subjects.

Columbia University Bulletin of Information, 1918-19, pp 6, 7.

Capen, p 176

Application of the new Plan of Admission to foreign students.

At Harvard the principles of the New Plan of Admission will be applied in admitting students from foreign countries in which English is not the native language :—

Harvard Catalogue, 1915-16, p 516

(*a*) By accepting in place of the School record ordinarily required a certificate that the applicant has completed a School course which entitles him to enter a University in his own country.

(*b*) By furnishing an examination in the native language of the applicant in place of the examination in English ordinarily prescribed, and by accepting an examination in English for the foreign language prescribed for all candidates.

Such students must take two other examinations, one of which must be Mathematics, or physics, or Chemistry.

All candidates for the degree of B.A. must be examined in an ancient language. (In the case of Indian students the ancient language might be Sanskrit or Arabic.)

Examination procedure for Indian students.

An Indian student will have to produce in the first place to the authorities of the American College or Universities a complete record of his academic career and attainments. If this is found satisfactory he will be able to appear for the

Entrance Examination at which he will take up English, Sanskrit or Arabic, Mathematics, Physics or Chemistry, and History. Even if he fails in this examination he might still be admitted conditionally, or he might join as special student and might proceed to remove his Matriculation deficiencies later on by appearing at the special examinations which are held twice annually for this purpose. Most Colleges have a High School course which a conditioned student may take along with his other College courses, but the conditions must be removed before commencing the second year's work.

Admission with conditions.
Columbia Bulletin, 1918-19, p. 9. Harvard Catalogue, 1915-16, p. 513

Under the Old Plan candidates who have not entirely completed the stated requirements for admission, but who are regarded as qualified to pursue to advantage the work for which they desire to register, may be admitted conditionally. Except for reasons of weight a student who has failed to complete a course in a good Secondary School will not be admitted with conditions. No further general information as to the terms under which students are admitted conditionally can be given, as each case is considered individually upon its merits. In admitting students with conditions the Committee on Admission take into account not only the number of units in which a student passes, but also the quality of his work as shown both by his examinations and by his School record. It is impossible, therefore, to define the requirements for admission with conditions in terms of units. The requirements for admission without conditions are defined above in terms of units and grades; but the requirements for admission with conditions vary with individual records. The Committee on Admission consider each case on its merits.

Harvard Catalogue, 1915-16, pp. 556-557.

A student who enters College conditioned may clear his record *either*—

(*a*) If he is conditioned in a prescribed subject, by passing *not later than the beginning of his third year in College*, the admission examination in that subject.

(*b*) If he is conditioned in an elective subject, by passing, *not later than the beginning of his third year in College*, an admission examination in an elective subject. (Duplication of College work is not allowed.)

(*c*) By taking additional work in College. (If a condition is on a prescribed subject, the work must be under the Department concerned.)

A student who fails to remove his admission conditions before the beginning of his third year is placed on probation.

Examinations of the College Entrance Examination Board.
Capen, p 60

There is a movement towards unity of the examination system, and about 30 institutions have formed the above organisation to conduct examinations in common. A student is admitted by any College which is a member of this Board if he passes these examinations *in the subjects required by the particular College in which he desires to be admitted.* The standards maintained by the Board are so high that a certificate showing that a candidate has passed its examinations is generally accepted for entrance *by other institutions also.* Nevertheless a few institutions which admit by examination prefer to conduct their own examinations.

Of course the subjects as well as the number of units required differ according to the institution which the student desires to enter. But by consulting the latest circular of these examinations the foreign student should be able to estimate whether his preliminary studies have fitted him for admission to the College of his choice, and whether his studies at home have been up to the level of the Secondary School education in America.

ADMISSION UPON CERTIFICATE.

Wisconsin Announcements, 1916-17, pp. 102-104.

It is needless to labour this topic as no Indian students are likely to use this procedure for admission. Suffice it to say that any High School or Academy in a State whose course of instruction covers the branches requisite for admission to any University (which allows this method) may be admitted to its accredited list of preparatory Schools after a satisfactory examination of the School by a Committee of the Faculty. The examination which will be conducted by a Committee of the Faculty will cover the course of study and the method of instruction in the School. The graduates of such an approved School will be received by the University *without examination* on the presentation of a certificate showing the satisfactory completion of the required units and containing the recommendation of the Principal. Under this plan a candidate for entrance must present a statement from the Principal or Head Master of the School which he has attended, showing the amount and character of the work he has done.

This method might some day be feasible for Indians, if there was a standardization of courses in our Schools and Colleges on the American principle, and our units of study were brought up so as to be equal to or in excess of the units required in America. Such a system on our side would also require recognition by the proper American authorities.

ADMISSION WITH ADVANCED STANDING.

(1) College credit for preparatory work.

Chicago Circular of Information, 1916-17, pp. 111 and 115.

Many Universities encourage any adequately equipped Secondary Schools to extend their work so as to cover some of the courses offered in the Freshman and Sophomore years of College. The present tendency in larger centres to develop public High Schools into junior Colleges requires such co-operation between the Schools and Colleges. These Universities aim at developing this intimate co-operation with a view to promoting, wherever possible, the enlargement of the Secondary School curriculum. The student who has completed the necessary number of units of preparatory work, is encouraged to accummulate College credits while still in the High School. Credit is limited to courses which substantially comport with the programme of the Colleges of the University. Such students will be required to maintain themselves at a high level after they begin courses in the University itself. Thus, at Chicago the student will receive full College credit for his preparatory work if he maintains during the first two quarters of his work at the University an average standing of B– or better.

(2) Anticipation of College studies by Examination.

Harvard Catalogue, 1915-16, p. 547.

At Harvard, students who have extended their studies beyond the requirements for admission may present themselves for additional examinations in (*a*) the prescribed studies of the Freshman year, and (*b*) in certain other prescribed studies, if they can prove adequate preparation for the examination. An anticipatory examination is regularly counted, on petition, towards a student's degree, provided he completes the work for his degree in three or three-and-a-half years and takes his degree.

(3) College credit for College work.

Harvard Catalogue, 1915-16, p. 549.

Columbia Bulletin, 1918, p. 8.

Credit can be given for the amount of College work done elsewhere. Students who have completed creditably the work of at least one year at other colleges or scientific schools may be admitted without examination to the standing for which their previous training seems to qualify them. Every person wishing to enter under this provision must make a complete written statement of the work on which he bases his application. Much importance is attached to the quality of the work offered.

At present this procedure is not possible for Indian students. Thus, a student who has put in a couple of years at an Indian College cannot enter an American College in the third year. The reason is that American courses of study are either very extensive or imply a great deal of specialised work, and this necessitates a large amount of pre-requisities or preparatory

studies for which there may have been no opportunity in India. The curriculum of an American College is quite different from that of an Indian College, and hence it is hard to say that an Indian College student has had the equivalence of the advanced standing.

ADMISSION AS ADULT SPECIAL STUDENTS.

This is the best way in which an Indian student can join. He does not require any adjustment of studies and he can remove his Matriculation deficiencies in time by passing special examinations. *Harvard Catalogue, 1915-16, p. 549.*

The courses of study provided by the Faculty of Arts and Sciences are open to mature persons who give satisfactory evidence of their fitness for admission, although they are not in a position to meet the requirements for registration as Freshmen and have not studied in another College or Scientific School. Each application for this privilege is considered by itself in accordance with the applicant's previous history and the evidence he furnishes as to his fitness to pursue the particular courses of instruction to which he seeks admission.

ADMISSION TO GRADUATE SCHOOL.

A graduate from India can generally be thus admitted. Ours will, of course, be considered a second grade University and the candidate cannot take his second degree in one year. An M.A. of our University can take his M.A. in America in one year and his Ph. D. in two years.

When a student is admitted and chooses his line of study, the question arises of the work he has already done and whether it fulfils the requisites for the degree. If he has not, he has to put in more time and sit for the necessary examination to show that he has fulfilled the conditions. This is because the courses of study are so radically deficient.

In the case of natives of America graduates from four-year course of liberal study in any approved University or College or Scientific School can be admitted to the Graduate School without examination. The training of the graduates of other Universities has to be substantially equivalent to that represented by the baccalaureate degree of the University to which admission is sought. The latter University will determine the substantial equivalence of training by such methods *Wisconsin Announcements, 1916-14, p. 384. Harvard Catalogue, 1915-16, p. 670.*

as seem best adapted to each case, and may impose upon any candidate such additional requirements as seem needful and just. Thus, if you are going up for the M.A. degree of a University it presupposes training in a foreign language equivalent to that required by it for the Bachelor of Arts degree and reserves a right to test by its own methods the adequacy of such training. For the degree of Master of Science the under-graduate preparation should be equivalent to the P. Sc. or to the B.A. or Ph. D. degree with major in Science.

With reference to those who propose to join the Graduate School, there is some possibitity of obtaining a scholarship if the American University to which admission is sought is judiciously selected. A brilliant student of the Calcutta University (who is now a Lecturer there) obtained the right to a Fellowship of 500 dollars a year by forwarding from Calcutta a thesis with the recommendations of two of his local Professors. The amount was actually obtained after one years' Post-Graduate work. The same student also obtained a tutorship in his Department, and later on a travelling fellowship which enabled him to finish his studies in Europe.

It is to be noted that as a Post-Graduate student one has, on the one hand, less of social life and of admission to societies, and, on the other hand, fewer social obligations and expenses. Those who are keen on enjoying the social side of College life prefer, therefore, to take the Bachelor's degree even though they have been admitted as Graduate students. This, of course, does not militate against the proposition that from the academic point of view the Graduate School is the copestone of the American educational system.

REQUIREMENTS FOR ADMISSION TO PROFESSIONAL COLLEGES.

(1) Course Preparatory to Medicine.

IN general no student is admitted to the medical school who has not completed two years' of College work in addition to the four-year High School course. During these two years a certain number of prescribed studies have to be gone through to qualify the student for the Medical Course. Thus, Harvard requires one year's course in Physics, in Biology and in General Chemisty and in Organic Chemistry besides a reading knowledge or German or French. At Columbia the requirements for admission to the College of Physicians and Surgeons include the following subjects, to be taken in College:— One year of Physics, one year of Biology, one year of Inorganic Chemistry based on College entrance Chemistry, one-half year of Qualitative Analysis and one-half year of Organic Chemistry, two years of College English, and French or German. At Columbia special programmes of study are recommended to students who can devote three years to preparation for entrance to the Medical College, such, that at the end of their first year at the Medical College they can take the B.A. degree. As regards those students who can only afford two years for the preparatory study for the Medical College, they can take advantage of certain programmes of study by which they can obtain the degree of Bachelor of Science after two years' work in the Medical College. At Chicago the preparation for the Medical College includes Trigonometry, English, Physics, General Chemistry and Biology, and a reading knowledge of German or French. No student is admitted with conditions in any of the required subjects. All Universities will admit Graduates in Arts or Science of approved Colleges to the Medical College provided that they have such knowledge of Physics, of Biology, of General Chemistry, and of Organic Chemistry as may be obtained from one year's course in each of these subjects and that they have a reading knowledge of French or German.

Harvard Catalogue, 1915-16. p 782.

Columbia College Announcements, 1918-19. p 14.

Chicago Circular, 1916-17 p 349.

(2) Course Preparatory to Engineering.

At Harvard, in order to be admitted as a first year student to one of the four-year courses in Engineering or Mining, a candidate must be at least seventeen years of age and must pass examinations in the following subjects :—Algebra (higher

Harvard Catalogue, 1915-16. pp 711-712.

and lower), English, French (Elementary), Plane and Solid Geometry, German (Elementary), History, Physics and Latin. Examinations in these subjects may be taken at the Entrance Examinations of the Massachusetts Institute of Technology in Boston in June, or at the admission examinations to Harvard College in June or September. Instead of going at once from the High School to the Institute the student may enter Harvard College and remain either until he graduates, or for a shorter time, and then enter upon an Engineering or Mining Course with advanced standing.

To be admitted as a student in the second, third, or fourth year of any regular course, an applicant must have attained the age of eighteen, nineteen, or twenty years, respectively, and in general must pass satisfactorily the examination for admission to the first-year class, and examination in all subjects given in the earlier years of the course which he desires to enter, unless he has completed this work in another institution.

A graduate of a college or science school of good standing is admitted without the usual entrance examination, and will be permitted to enter any of the courses with the standing to which his previous studies entitle him. He will, in general, be credited with all subjects in which he can show, by examination or otherwise, a satisfactory standing.

Columbia College Announcements, 1918-19 p. 13

Michigan Catalogue, 1917-18, p. 359.

At Coulmbia there is a special programme organized by the Faculty of Applied Science as a preparation for the Graduate Courses in Mines, Engineering and Chemistry. For this programme the entrance units should include English, Elementary, Algebra Complete, Plane Trigonometry, Plane and Solid Geometry, Chemistry, Physics, and Drawing, and 3 units in either French or German. At Columbia and at other Universities there are combined collegiate and Engineering curricula by which students can take the degree of B. A. and also satisfied the requirements for admission to the Schools of Mines, Engineering, and Chemistry. The backbone of the course is the sequential work, which in Mathematics begins at entrance and continues until the middle of the third year; in Chemistry it begins in the second year and continues through the third, and in Physics it begins in the Spring Session of the second year and continues for three sessions.

Michingan Catalogue, 1917-18, p. 331

The Michigan University requires the following prescribed units for admission :—

GROUP I.—Absolute Requirements—10 units.

English,—(Grammar, Composition, Classics, History of English Literature), 3 units.

Mathematics,—(Algebra, through quadratics, Geometry, Plane, Solid, Spherical), 3 units.

Physics, 1 unit.

History, 1 unit.

Greek, Latin, German, French, Spanish, (one of these), 2 units.

GROUP II.—Alternative Requirements, 1½ or 2 units.

Chemistry, 1 unit.

Trigonometry, Plane, ½ unit.

German or French, 1 or 2 units.

Greek or Latin, 1 or 2 units.

Manual Training, 1 unit.

GROUP III.—Optional Requirements, 3½ or 3 units.

The 3 or 3½ optional units may be presented in any subjects for which credit towards graduation is given by the accredited school and which are taught in a manner approved by the University; but no more than 3 of the 15 units required for admission will be accepted in vocational subjects and no more than two units in any unit of freehand drawing.

(3) Course preparatory to School of Commerce.

Chicago Circular, 1916-17, p. 403.

The Chicago Circular advices students expecting to enter the School of Commerce to take in their secondary school training, English, French or German or Spanish, Mathematics through Trigonometry, History, Physics, Chemistry, and Physiography. Mechanical Drawing, Shorthand and Typewriting are also desirable.

Harvard Catalogue, 1915-16. p. 672.

Among the courses offered by the Department of Economics in Harvard College those on the Industrial and Financial phenomena of modern times are of service to students who purpose to enter the Graduate School of Business Administration. Such are the courses on Principles of Economics, Money and Banking, Economics of Transportation, Problems of Labour, Economics of Corporations, Taxation, the Economic and Financial History of the United States, European Industry and Commerce in the nineteenth century, Statistics and Physiography. A command of good English and a reading knowledge of at least one modern language, either German or French, are expected. Proficiency in German, French and Spanish, is desirable. Some knowledge of mechanical drawing is highly useful in almost all branches of business.

THE ACADEMIC YEAR.

Harvard Catalogue, 1915-16, pp. vii x. Chicago Circular, 1916-17, pp. v-vi. Capen, p 27.

The academical year is generally nine months (or 32 to 36 weeks) long and extends from about the middle of September to the middle of June. (Some of the Universities in California begin about the end of August and close in May). About the middle of September we have the examination for admission; and the academical year begins in all Departments of the Universities about the end of September. The Semester Plan is followed by most Universities—the first Semester extending from the latter part of September to early in February, and the second Semester terminating about the middle of June. Mid-year examinations are held at the end of the first Semester and Final Examinations at the close of the second Semester. Thus, the examination in the first Semester takes place in the last week of January or the first week of February; while the Final Examinations of the second Semester come on in the second and third weeks of June. Generally there are two or three examinations for the removal or conditions, *i.e.*, examinations where the student who has been conditionally admitted might remove his Matriculation deficiencies. Such examinations are held generally at the beginning and end of the first term and in the middle of the second. Besides the Final Examinations there are usually four college monthly examinations in each term and these examinations are by no means unimportant since the results of these monthly examinations receive due weight in the final result. Many Universities and Colleges have four terms of twelve weeks each—any three of which constitute a year's work. As a general rule it must be remembered that after taking three years of four terms each the student must wait another year before graduation, *i.e.*, three years and nine months must elapse between Entrance and Graduation.

The Summer Session.

Many Universities and Colleges conduct a summer session from the latter part of June until the middle of August. According to the institution and the subject, the length of the session varies, being six weeks, eight weeks or even twelve weeks. This session serves several important purposes. It enables regular students who have not completed their work during this term to acquire an opportunity of finishing it. More intensive work is done during the summer session which enables the work in any subject to be completed more rapidly. Thus, a year's course of 30 lectures (one lecture per week), is covered in the Summer Session by having one lecture per day (six days per week) for the six weeks. As this might lead to an undesirable congestion of work in individual cases, a student

is limited as to the number of courses which he can take in the Summer Session. Another purpose is served by this Session, in that, Teachers in Schools obtain an opportunity of prosecuting professional studies during School holidays. Thirdly, outside students whose interests do not centre either in academic examinations or in the teaching profession avail themselves of an opportunity to undertake courses of studies in which they are interested. As Mr. Keppel says in his History of Columbia University : "The Summer Session is worthwhile for its own sake, and it is also worthwhile as a sort of fifth wheel for the whole complex academic vehicle. Educational slack of all kinds can be taken up in it without disturbing the winter programmes. Students transferring from other institutions, for example, can clear up pre-requisite subjects that would otherwise prove most troublesome. The havoc wrought by illness or too great devotion to extra-curricular matter can be repaired. From the faculty point of view important educational experiments may be tried or new teachers given a chance to show what they can do."

During the present war the students are eager to complete their course of study as soon as they can in order to be ready for service; such students have largely availed themselves of the opportunities afforded by the Summer Session. Lastly, those students who want to join technical schools, like those of Architecture, Mining, and Engineering, are advised to attend the Summer Session with a view to completing the requirements for admission.

Announcements of the Columbia Schools of Architecture and Engineering, page 8.

Summer Schools present special attractions to the foreign student. If he happens to arrive in the United States in June or early July he may profitably use his time and prepare himself for his later regular Matriculation by enrolling in a good Summer School. Opportunities for the study of English are commonly offered. After he has begun his Collegiate or professional course he may shorten the period of study and also learn something of different Universities by frequenting Summer Schools.

Capen, page 28.

The last point mentioned by Mr. Capen is of great importance to the foreign student. By attending a Summer Session the Indian student can become acquainted with his environment in the American College. The opportunity is also utilized by American students of one University to become acquainted with methods of teaching in other American Universities. This has proved a matter affording such advantages that there is now a convention that no student of an institution can become a teacher in that institution unless he has spent a year in another institution.

CHOICE OF TIME AS REGARDS ENTRANCE.

As many institutions admit new students several times a year there is no objection, in general, to an Indian student leaving for America to join an institution whenever he chooses. The main thing is to apply for entrance several months ahead and to send with the application an official record of one's College or University work. As soon as the application is accepted he can leave for America. But, speaking generally, it is advisable to join about September when the College work starts. Indeed, it is better to be on the spot a month or two earlier so as to get the opportunity of the Summer Session to accustom oneself to the environment of the American University, and to remove any deficiency in the matter of one's studies by attending the Summer Session. Such work is, as we have seen, more valuable in the case of students of technical subjects—Medicine. Engineering or Mining. In any case the student is earnestly advised to be present at the opening of a Semester.

EXPENSES.

The annual tuition fee for a student varies according to the institution and ranges from 40 dollars to 200 dollars. The State aided institutions charge smaller fees and sometimes no fee to students born in that State. The courses in Medicine, Law and Technical studies are usually more expensive and average between 200 dollars and 250 dollars. The living expenses varying from 15 dollars to 48 dollars a month according to the location and standard of living. The Columbia University supplies the following estimate of the expenses for an academic year :—The annual *tuition* fee for a student, taking 16 points per session, winter and spring, would be 196 dollars. Sixteen points per session is slightly more than sufficient to complete the courses in four years. The other expenses are :—

Educational Guide, p 20.

Columbia College Announcement, 1918-19, p. 7.

	Low. Dollars.	Average. Dollars.	Liberal. Dollars.
Books	14	20	26 up
Room (thirty-seven weeks)	90	129	180 up
Board (thirty-seven weeks)	165	197	255 up
Clothes and laundry ...	44	100	182 up
College incidentals ...	10	23	46 up
Other expenses ...	26	56	103 up

This calculation gives us about 725 dollars as the total average expense for the academic year of nine months; the other months require additional funds.

At Princeton "the University catalogue announces that the estimated average minimum is 400 dollars and the average medium is 549 dollars, which sums include room rent, board, heat, light, washing, tuition, and other university fees. Statistics compiled from the actual payments of thirteen hundred under-graduates in 1913 show that for the above items eight men spent less than one hundred dollars, forty-six spent between one hundred and two hundred dollars, seventy-six between two hundred and three hundred dollars, ninety five between three hundred and four hundred dollars, and one hundred and forty-one between four hundred and five hundred dollars, or that the University bills of three hundred and sixty-six men (over twenty-eight per cent. of the total) for the items referred to were under five hundred dollars. The corresponding expenditure of five hundred and seven (thirty-nine per cent.) was between five hundred and six hundred dollars. So that the necessary expenditure of over sixty-seven per cent. of the under-graduate body was considerably under

Collins "Princeton" pp. 391-92.

six hundred dollars. On the other hand, four hundred and forty-two (over thirty-two per cent.) spent between six hundred and eight hundred dollars, and a handful, or exactly five spent between eight hundred and nine hundred dollars. These statistics prove nothing save that a man's necessary expenses at Princeton are, as they are everywhere, dependent very largely on himself," for Princeton is a swell institution.

Harvard Cat ilogue, p 498

The necessary expenses in Harvard of tuition and residence include tuition (150 dollars), the Infirmary fee (4 dollars), room (50 dollars to 200 dollars), board (120 dollars to 300 dollars). In addition to these charges for which everyone must plan, a student's expenses will include charges which vary with the means and habits of the individual—as, for example, furniture books and stationery, clothing, fuel, laboratory-charges, membership in societies, subscriptions, service, and the expenses of vacations. To help students in reducing their expenses, a number of co-operative institutions are established in connection with the University, such as the dining halls, the Loan Furniture Association, the Text-book Loan Libray, the Harvard Co-operative Society, etc.

Wisconsin Announcements, 1916-17, p 73.

Coming now to Wisconsin, in 1914 answers to a questionaire of the Board of visitors indicated average student expenses to be about 450 dollars for the school year. This excluded tuition and University charges, but included travel, clothes, books, stationary, room rent, board society charges and miscellaneous expenses. The average expense would now be somewhat higher—between 450 dollars and 500 dollars.

The school year budget of an average tudent might include a combination of the following items :—

	Dollars
Incidental fees, year ...	24·00 to 24·00
Locker fee, freshmen and sophomores	2·50 to 2·50
Military uniforms, freshmen and sophomores	20·00 to 25·00
Books and stationery	25·00 to 50·00
Room rent	75·00 to 160·00
Board	160·00 to 200·00
Laundry	20·00 to 35·00
Incidental expenses	50·00 to 150·00
Non-resident tuition	124·00 to 124·00

These figures are an estimate of the cost to the average student; many students spend more or less. The Student Employment Bureau advises students earning their own way to come with at least 200 dollars capital.

Summer Session budget items (6 weeks basis)—

	Dollars	Dollars
Incidental fee	15·00 to	15·00
Room rent	10·00 ,,	25·00
Board	27·00 ,,	35·00
Books and stationery	5·00 ,,	10·00
Incidental expenses	10·00 ,,	30·00
Laboratory charges (depending on courses)	,,	15·00

We shall complete our little comparative study of the student's expenses at the leading American Universities by transcribing a valuable statistical estimate of the annual expenses at a State University given in the "Educational Guide for Foreign Students," page 22 :—

Schools or Departments.	Tuition	Average total annual expenses per student excluding tuition.	Entrance requirements.	Length of course
				Years.
College of Literature, Science and the Arts	Dollars. 62	Too great variation for average.	Four year high school course or equivalent.	4
Colleges of Engineering and Architecture	Do 87	Books 20-25 dollars.. Lab , 10—30 dollars Instruments, 25—30 dollars.	Ditto ditto	4
Medical School . ..	Do 120 (including Lab fees)	Books 120 dollars ...	Two-year college course, including language physics, chemistry and biology	4
Law School	Dollars 77	Books 40 dollars ...	Two-year college course	3
College of Pharmacy ...	Do. 77	Laboratory 80 dollars Books 14 dollars.	Four-year high school course or equivalent.	3 and 4
Homeopathic Medical School.	Do 120 (including Lab fees)	Laboratory 76 dollars Books 25 dollars.	Two-year college course, including language, physics, chemistry and biology.	4
College of Dental Surgery	Dollars 127	Books, instruments and laboratory, 115 dollars.	Four-year high school course or equivalent	4
Graduate School ..	Do 62	Two great variation for "average"	Four-year college course	Indeterminate.

Indian students who have been in America inform me that their monthly expenses in the Colleges there may be placed somewhere between Rs. 125 to Rs. 150 per month, or that they consider Rs. 2,000 to Rs. 2,500 as a sufficient annual allowance. A furnished room can be obtained per week for about 3 dollars, and 5 dollars a week suffices for boarding. Of course much depends upon the place where the student is carrying on his

work—in a place with democratic traditions much less can be spent than at a swell University. It is also to be remembered that owing to the war the cost of living has risen very greatly in America as in other countries.

BOARD AND LODGING.

In the matter of board and lodging, the Indian student has the choice of several alternatives. He might select rooms in the University dormitory and take his meals at a restaurant or preferably at the University Hall. The food at the University Hall would be slightly cheaper and more wholesome. He might hire a room either in the University dormitory or in a private family and may cook his own food. This is the cheapest way of living. Finally, you can live with a private family and take your meals out; or, if the private family is a sort of boarding-house you can take your meals there.

vard Catalogue, 1915-16, pp 498-99

Many Universities maintained dining halls conducted at cost for the benefit of the members of the University. The board might be provided at a fixed price per week or on the *a la carté* plan. The membership of these halls is open to any member of the University. The cost of board varies with the needs of the individual; we learn that at Harvard, some members satisfy their wants at a cost of about 3 dollars a week, but 3·50 dollars is ordinarily to be regarded as the minimum cost of substantial fare. The charges for board are made on the College term-bill.

Wisconsin Announcements, 1916-17, p 71.

The Wisconsin University also maintains a dining room and a public Caféteria. At the same time it announces that the average price of board in private boarding houses ranges from 4·50 dollars to 5 dollars a week. Similarly, other Universities also maintain dining halls.

Harvard Catalogue, 1915-16, pp 499-507.
Chicago Circular, 1916-17, pp. 85-86

The University also supply a certain amount of lodging accommodation. Every student to whom a room is assigned will be held responsible for the full year's rent, and in some cases bonds must be executed to guarantee the full year's rent. At Harvard College the prices of the College room vary from 30 dollars to 350 dollars. At Chicago the cost of rooms in the dormitories is from 25 dollars to 75 dollars per quarter of 12 weeks. This includes heat, light, and care. We also read in the Chicago Circular that "most students off the quadrangles secure furnished rooms, which may be had at prices ranging from 30 dollars to 60 dollars a quarter, and take their meals at the University or at restaurants in the neighbourhood. It

is difficult to find good board by the week or month, and there are very few places where board and room are offered. As a result, it is customary to pay for each meal separately. Cafeteria service is provided at the University Commons—Ida Noyes Hall for women and Hutchinson Hall for men. Men occasionally find a small room, or a dark room, for less than 30 dollars a quarter, but women usually have to pay 36 dollars or more. Householders usually prefer men, hence the price level is higher for women. Not less than four a dollars a week should be allowed for table board, and one can seldom find a room with outside light, droplight, a study table, ample closet space, and a comfortable bed for less than 36 dollars a quarter.

Desirable furnished room for light house-keeping are difficult to find. They range in price from 16 dollars to 30 dollars a month. In the University neighbourhood there are very few two or three-room apartments with private bath, and their rental unfurnished is from 30 dollars a month up. The so-called kitchenettes in the vicinity of the University are small, usually dark, rooms with a kitchen table and gas plate, but never with running water. Rooms with kitchen privileges are to be had at the regular room rates with an additional charge of about 6 dollars per quarter.

Furnished rooms or apartments of from four to ten rooms vary in price from 30 dollars to 150 dollars per month."

Taking account of these considerations the annual expenses, exclusive of tuition and laboratory fees, at Chicago for thirty-six weeks of a student residing within the quadrangles in the University, are thus estimated :— *Chicago Circular, 1916-17, p 85.*

	Lowest. Dollars.	Average. Dollars.	Liberal. Dollars.
Rent and care of room ...	60·00	105·00	225·00
Board	135·00	162·00	225·00
Laundry	15·00	25·00	35·00
Text-books and stationery ...	10·00	20·00	50·00
Total ...	220·00	312·00	535·00

At Columbia College, "students in the first year of residence who are not living at home or with relatives, are recommended to reside in Hartley Hall, three floors of the building being reserved for them. For such students other places of residence are subject to the approval of the Dean." **Columbia College Announcements,** *1918-19 p. 2.*

STUDENTS' OPPORTUNITIES OF EARNINGS.

Collin's Princeton, pp 392-93 Keppel's Columbia, pp 198-99.

A considerable proportion of American students support themselves by working in the summer vacations and in the evenings. Almost every College has an Employment Bureau; a student has to apply to these Bureau personally, and if there is no employment ready at the time his name will be put on the register and information will be sent to him as to openings. Some of the employments are temporary and can be carried on during the summer vacation; in this way as much as 200 dollar can be earned. Other employments like waiting at the table in lieu of meals can be carried on all through the year. An active student might thus gather 200 dollar in the summer vacation and might earn, say, 150 dollar by waiting at the tables or serving as a general help. In some cases such work can be found at the student's teacher's house or in the University dining hall. Indian students, however, have generally a dislike for waiting at table, or washing dishes and other menial work and therefore are not likely to earn so much. Moreover, self-help very often interferes with one's studies and prolongs the stay necessary for obtaining a degree.

It makes absolutely no difference in a man's standing among his students to have it known that he is helping to pay his own bills. Even at a University like Princeton a great number of students are working for their living. "The records of the Bureau of Students Self-Help show that the large majority of men on its rolls are freshmen and sophomores, indicating that ordinarily by the time a man becomes a junior or senior he has so 'learned the ropes' he does not have to depend on the guidance of an organization in working his way.

Of the one hundred and sixty-nine men actually enrolled in the Bureau in 1913, forty-four had one hundred dollars or less (six had nothing) and forty had between one hundred and twenty-five and two hundred dollars to see them through college. Employment was found for them and no student was compelled to discontinue his college course on account of lack of funds. This does not mean that Princeton is a Mecca for needy students. There cannot be so great an opportunity to find employment in a small town as in a city; but, given health, brains, and energy, and if possible enough funds to see him well through his freshman year, a student requiring financial assistance has a good chance of earning it at Princeton. The variety of work done ranges from the customary lines of college employment, such as tutoring, stenography, newspaper work, and selling agencies for various articles, to

acting as ushers and gatemen at the University Field, library work, book-keeping, gardening, work on the college farm, and the managership of concerns like the Students' Clothing Pressing Establishment, Students' Express, and the Shoe Shining Parlor. Board is the most expensive item in a man's bill; but although the dining halls are operated at cost, the University making no profit whatsoever, provision is made at the dining halls for those men who cannot afford to pay the full price—six dollars per week. If a student can satisfy the Under-Graduate Dining Hall Committee that he must have a reduction, it will be granted to him. About ninety men are receiving reductions from one dollar and seventy-five cents to five dollars a week and in return they perform such work as is assigned, consisting of clerical and executive duties, news stand and tobacco service, etc. No students wait on tables."

A study of the work of the Bureau or Employment at Columbia University shows the extraordinary variety or the employments found for students. "A large proportion of students have to be self-supporting while in residence; indeed, it is the opportunities for work which New York City offers that attract many of them to Columbia. A recent valedictorian was a Custom House Inspector. Others were policemen, revenue cutter officers, 'lecturers' on sightseeing motors, artists' models, organizers of after-school classes of the little children of the rich, civil service and election workers." It is noteworthy to find that out of 1,400 students at Columbia in 1913-14, 241 earned their living as tutors, 238 as ushers, 225 as type-writers, 168 as clerks, 90 as salesmen, 63 as messengers, 46 as stenographers, 39 as "companions", 27 as waiters, and 28 as translators.

Annual report of Columbia University, 1913-14, p. 196.

THE FRESHMAN YEAR.

The course of study at a College of Science or Arts in America is divided into four years—the Freshman Year, the Sophomore Year, the Junior and the Senior Year.

Wiscoinns Announcements, 1916-17, p 112.

The *Credit* is the Unit for computing the amount of work required for Graduation. This is equal to one hour of recitation or lecture per week for one Semester. The number of Credits required for Graduation varies between 120 and 140 according to the institution, *i.e.*, the student has to attend and pass in from 30 to 35 Credits per year.

We are first to note the elasticity of the course in American University. The course of study in the early American College was wholly prescribed or compulsory. Each student at a given institution took all that was offered and consequently the same as each of his class mates. But at present we have an Elective System, and though no two institutions are administering the Elective System in exactly the same number each observes the same general principle. As a result the student has a sufficient amount of liberty in following his particular bent as regards studies.

Dexter, pp. 289-91.

Gardiner Harvard, pp 98-101.

The following account of the Elective System as it is worked in Harvard might be of interest. "In 1910 the free Elective System was somewhat modified by requiring all Under-Graduates to use the System as all sensible Under-Graduates had always used it. Under rules established in that year the subjects of instruction are divided into four large groups :—

(1) Language, literature, fine arts, and music ;
(2) Natural Sciences ;
(3) History, Political and Social Sciences ; and
(4) Philosophy and Mathematics.

The new rules require each student to take at least six out of the sixteen Elective courses required for the degree in some one department or in closely related departments, and to distribute another six courses among the three large groups named above in which his chief work does not lie. Thus, each student must get a fairly thorough knowledge of a single subject, and at the same time he must have, at any rate, a bowing aquaintance with the other chief fields of knowledge. One of the most important of these new rules for the choice of Elective is that which requires all students before the end of the Freshman Year to choose the subjects which they will study through the latter years of College. To aid them in making this choice, each is assigned to an adviser in the Faculty. At present each adviser has not more than four

students from each class, but his relations with those four students continue throughout the college course. Thus the student is fairly sure of interest and advice from a friend who knows him and his needs. Each student must submit his list of studies to his adviser for approval before it is sent to the Committee on Choice of Elective for final acceptance. Where a student wishes sanction for deviations from the rules, he must convince, or try to convince, his adviser of the wisdom of the exception before going to the Committee. The advisers having each so few students to care for, have a sincere interest in their work and give time and thought to the problems of the individual student. Within a few years a philosopher, the range and profoundity of whose thought have made him known all over the world, made a considerable number of visits to the College office in order that he might be able to work out intelligently the details of the courses of the four young men to whom he was adviser."

Harvard Catalogue, 1915-16, pp. 552, 554.

At the opening of the academical year every student is required to hand in a list of studies, both prescribed and elective which begin in the first half-year. This list must be written on a card provided for the purpose and it must be signed by the Adviser or the Dean of the College. These cards are deposited with the Registrar or the Recorder of the University.

In the Freshman year some Colleges require only one group of prescribed studies, viz, English. But other Universities require a larger number of prescribed studies. Thus Harvard requires Rhetoric and English Composition for those who have not passed the admission examination called English A. The course of English studies runs three times per week. Those who have not passed English *A* have to do the prescribed English of the Freshman Year. Other Colleges, however, do not require Rhetoric as Harvard does. Besides English, Harvard requires German and French which are also taught three times a week. The Indian students, however, might substitute Sanskrit for one of the foreign languages. Any student for whom both French and German are prescribed may postpone one of these studies until his Sophomore Year, or may remove the prescription in one of these subjects by passing an admission examination therein before the opening of his second year in College. The Summer Session helps the student in removing these conditions.

Chicago Circular 1916-17, p. 116. Wisconsin Announcements, 1916-17, pp. 116-18.

The rest of the Credits will be made up from the *Elective Studies*. These studies are generally divided into groups :—

(1) Languages other than English.

(2) Natural Science, including Botany, Zoology, Biology, Chemistry, Physics, and Astronomy.

(3) History, Political and Social Sciences. (This would include Politics and Economics.)

(4) Philosophy and Mathematics.

Provision is made against over-specialization on the one hand and a mere smattering of a study on the other. Thus in the Columbia University no student may take more than four hours' work on the same day, or more than nine hours' work per week in any one department. Similarly no one-hour course will be allowed unless taken in connection with, or as a supplement to, a cognate course.

Columbia College Announcements, 1918-19, p 8

As honours courses have been introduced into American Universities, any student free from entrance conditions may elect to study for a degree with honours and pursue a curriculum involving less prescribed work but more independent reading and more thorough study in chosen than are required of the general candidates for a degree.

The choice between the honours curriculum and the general curriculum is ordinarily to be made not later than about the close of the Freshman Year. The candidate chooses two subjects in which he will offer honours work, and in consultation with the officers in charge of the subjects he has chosen, plans his courses so as to meet the honours requirements.

The granting of honours is dependent upon the completion with high standing of honours courses in each of the chosen subjects, these courses being designed to guide the candidate's supplementary reading, and upon a final general examination covering the entire field of his Honours work.

Columbia College Announcements, 1918-19, p 10

As many of the technical colleges require a preliminary two years' course in the Arts College, the Elective studies in the Freshman Year must be so selected as to be useful for admission to the professional schools. In general students intending to take a combined course or to enter a professional school after graduation are advised to lay a thorough foundation for their later work rather than to anticipate subjects which will be treated intensively in the professional course.

For the study of Law, proficiency in Latin, at least one Modern Language, History, and Economics is desirable. In preparation for the work of Teachers' College and the Faculties of Political Science, Philosophy, and Pure Science, the student must be guided chiefly by his individual aims, shaping his course so as to lay a broad foundation for graduate work, as well as to anticipate in College some of the more elementary parts of that work. For all students of this class some training in Philosophy, Psychology, and Education, and a good working knowledge of French and German, are very desirable.

THE EDUCATIONAL AND SOCIAL ENVIRONMENT.

We might attempt here a brief contrast of American and Indian educational conditions. The first thing that will strike the Indian student is that, in a sense, his work in India has been of a comparatively more intensive nature. At home he has been accustomed to make intensive studies of one or of a few text-books ; whereas in America he will have to make a comprehensive study of his subject as a whole.

The student from India has to be ready for much harder work than he has been accustomed to at home. The hours of study are very long in American Universities extending very often from eight in the morning to five in the afternoon, with one hour for lunch (say from twelve to one). For private studies he must attend the library which keeps open up to ten or eleven o'clock in the night. This is necessary because there are no text-books prescribed and the teacher gives references to various books or articles which have to be consulted in the library. We can thus describe a student's normal day : he leaves home at seven in the morning, breakfasts in the University where also he has his lunch, works till five, has his bath at six, after which comes the gymnasium at which attendance is compulsory. At half-past six he can dine, if he likes, at the University and then he can work in the library from seven to ten.

Again, while in India the student was accustomed to live on pre-digested work and notes furnished to him by his teacher, in America he is thrown more on his own resources. He is given assigned work or Laboratory work on which he has to furnish weekly reports to his teacher. To examine further the thoroughness of the work done by him oral questions will have to be answered on the work in what is called the "Section meeting" which is a kind of sub-division of a class under an Assistant Professor. It seems that in America nothing is taken for granted as regards the work of the student. In most Colleges there are at the beginning of each hour "ten-minute examinations" or "quizzes" which recapitulate the work done on the same subject in the hour preceding. The work is further tested by monthly examinations and by Semester examinations. These examinations are much more important in deciding the fate of the student than the terminal examinations of our Indian Colleges. For even in deciding the place of the student in the final examination great weight is given to the results of these earlier

tests. It might almost be said that the success of the student depends to the extent of ninety per cent on the class work done in the year and up to ten per cent on the final examination. This is because examinations are conducted by the Lecturer or by the head of the Department who knows from class work, as well as work done in Laboratories, exactly what a student is capable of. He does not base his knowledge of the student entirely on the result of the final examination. Thus, as we have seen, in many cases the examination at the end of the year counts only for ten to twenty per cent in deciding the fate of the student. It is also to be remembered that in America the number of marks counting for a pass is much larger than in India—seventy-five or even eighty per cent marks being usually required for passing an examination.

The student is required to work even during the summer vacation. Generally, he has either to do work in the University for the Summer Session or, even if he leaves the precincts of the University, he might be working to earn his living.

In order to give the student a more complete idea of his new academic environment we abridge from Keppel's excellent book on the Columbia University an account of an academic year in th at institution.

Keppel's Columbia, pp. 206-227

The academic year at Columbia begins on July 1st, which is a far busier day than one who has no idea of a modern American University can realize. Suffice it to say that more than fourteen hundred students are enrolled during the Summer Session in a single day without confusion or delay. Before one realizes it the Session itself is upon us, and some five thousand people plunge at once as if by some miracle into vigorous and complicated activity. To say nothing of the formal work in the 435 courses of instruction, each of which is conducted daily, there are religious meetings, music and drama, excursions seemingly to everything of interest within range of the city, organization and meetings of all sorts of student societies, State and other. The Bulletin of a single week includes thirty different meetings and other enterprises, including excursions to the New York Stock Exchange, to a newspaper office, to the latest transatlantic leviathan, to West Point and the Navy Yard, addresses by the President of the University and others, lectures and dramatic readings, special chapel services, and open-air concerts. Besides the students at work in New York there are three hundred at the summer camp in engineering and others in mines, factories, law offices, and dispensaries. The old idea of a College vacation of four months has passed into history. In

August come open-air plays, for which the University Green is admirably adapted. Then the choral singers present the oratorio they have been rehearsing. The baseball teams from the various sections of the country decide the championship. At the latest possible moment comes consistent devotion to the library to prepare for the impending examinations and, these once over, the place is deserted as suddenly and as miraculously as it was filled.

From the middle of August to the 1st of September is the quietest time of the year. The admission officers have been busy with the interests of the next crop of undergraduates. Plans are being made for the entrance examinations in autumn and for what are known as the "lame duck" examinations for old students. Men whose return depends upon some remunerative work are besieging the employment office while others are settling in the dormitories or in near-by boarding-houses. By the third week of September the dormitories are well filled with men and women from all over the world. The new year actually begins on the last Wednesday of September, with exercises which overflow the gymnasium. An address is made by one of the Professors. Since it is purely a family party, he is not unlikely to poke fun at his colleagues. On the same day the juniors herd together the Freshmen to meet the already organized Sophomores for the first of three contests held under the eye of the Student Board of Representatives and designed to infuse class spirit into the youngsters.

Lectures begin promptly on the following day, and before the week is out everything is running as smoothly as if there had been no interruption. The new students, and there are some two thousand of them to be assimilated each year, are under the special eye of their Deans and advisers and of the men at the student building. Receptions are held to bring the large number of men entering the upper classes into touch with one another and with representative students. An interesting sight on these autumn days is the conduct of the prescribed classes in physical education in the open air on the South Field. Each new under-classman, by the way, receives a careful physical examination, at which heart and eye troubles are often brought to light for the first time. Two years later each student receives another set of measurements; in many cases the development under intelligent and expert guidance is remarkable.

The students have by this time settled down into their ordinary routine and the atmosphere of steady, rapid work, which is a real characteristic of Columbia, is made manifest. Except for the relatively small proportion of idlers, the question

in each student's mind is evidently not how little, but how much, he can get out of his intellectual opportunity. Jack, however, has no intention of being made a dull boy by an entire absence of play. The dormitories have begun to organize their informal hops, and their particular organ, the *Dorms*, appears on Sunday mornings. The existence of the fraternities is brought forcibly to the attention of the authorities by letters of protest from dwellers in the neighbourhood as to the enthusiastic and protracted nature of their initiation ceremonies. The students of architecture are also prone to make night hideous to eye and ear by costume parades to mark the close of a period of industry *en charette.*

At this time also comes the first meeting of the College Forum, where undergraduate teachers and students, on a basis of absolute equality and with delightful frankness and good nature on both sides, debate upon matters affecting the undergraduate life. For this year the question of primary interest is the transferring of responsibility for honesty in examinations from the University authorities to the students themselves.

By November the public lectures and addresses given under the institute or otherwise are in full swing. It is not unusual to have as many as eighteen of these addresses in a single week. To say nothing of the local supply of celebrities, nearly all persons of importance sooner or later come to New York, and students and citizens nearly always have an opportunity to hear them at the University—an opportunity which the males among the former too frequently neglect.

In December the student teas and faculty receptions begin. The Freshmen and Sophomores fight it out by proxy in a series of cane sprees, a sort of combination of wrestling and single-stick. The Sophomores also have their annual play, whose chief function seems to be to call attention by contrast to the really excellent performance of the University Dramatic Association also held about this time. On Christmas night the men remaining in the dormitories light the Yule fog with becoming pomp and circumstance. Except for the last two weeks in August, the Christmas holidays are the deadest time of the year, academically speaking.

The annual meeting of the Faculty Club comes in January when men who have dared to criticize the administration are elected to the house committee as a suitable punishment. Among the students, the debaters and other public speakers are aroused to action. Besides speaking themselves, the men interested in this side of undergraduate life conduct public speaking contests for schoolboys. Later on the youngsters are enticed to the University, for proselytizing purposes, by

receptions and athletic contests. Swimming and hockey are to the fore and the crew squad is getting under way. The mid-year examinations, however, are drawing nearer every day and there is standing room only in the library. These examinations are held in the gymnasium and are closely proctored, a system rather irritating to many of the students, but effective in eliminating "cribbing".

At the beginning of the second term a new set of undergraduates has to be assimilated into the system for the College admits nearly one hundred boys at this time.

Towards the first of May the advisers are beseiged by students (who, in most cases, have until then left them severely alone) for help in working out schedules for the coming year. Besides the regular "finals", a repetition of the February ordeal, oral examinations are held for candidates for the doctor's degree and for an honours degree in the College, the latter, with the *elan vital* of youth on their side, occasionally making a better showing than their more learned seniors.

The proceedings of the Columbia Commencement, which since 1901 have been wholly in English, are conducted in a dignified and impressive manner, there being none of the "ragging" which occurs at an encænia at Oxford. The trustees, faculties, and candidates assemble in the library building and march in procession through the grounds to the gymnasium, already crowded beyond its capacity with parents and friends, where the formal proceedings begin literally on the tick of the clock. The President makes a brief address to those about to receive degrees, in which he gives them some very useful advice, which it is to be hoped they follow in after years. This is the first of some dozen addresses which he must needs deliver on this one day. After this the candidates for each degree are formally presented by their respective Deans and their degrees are conferred *en bloc* by the President.

The candidates for honorary degrees, usually seven or eight in number, are then presented to the President by the University orator, and each degree is conferred with a summary of the qualifications of the recipient, as eloquent as it is terse.

After the formal exercises there are always several alumni gifts to be offered and accepted. Then comes the Alumni Luncheon, seven hundred or more men crowding into a room in which four hundred can hardly be accommodated with comfort. Some day a jostled millionaire alumnus may give us a suitable building on the spur of the moment. This luncheon is the occasion for wild cheering of everbody and everything. The recipients of honorary degrees make brief

addresses (at least they are asked to make them brief) and each new-born Columbia man invariably begins by an apt reference to his Fellow-Alumni. After the luncheon everyone moves to South Field, where the younger classes, after the prevailing fashion of the day among American Universities, garb themselves in weird costumes and perform to the edification of the onlookers. Then comes the baseball game, which the "Varsity" is seldom considerate enough to win. Then come a series of class dinners. After various experiments, more or less successful, the simplest method of entertaining the alumni after dinner has turned out to be to let them entertain themselves by singing, and hundreds of the alumni on each commencement night now gather on the steps of the library and, to the accompaniment of a good band, sing to their hearts' content and to the enjoyment of the thousands of citizens that gather in the court below.

From Commencement, which is held on the first Wednesday in June, to the end of that month is the home stretch of the year. All of the administrative, and many of the teaching, officers are very busy with duties which, though not of particular public interest, must needs be attended to. The most conspicuous event of the month is the conduct of the examinations of the College Entrance Examination Board.

ASSISTANCE AFFORDED BY THE YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Foreign Department of the International Committee of Young Men's Christian Associations at 347, Madison Avenue, New York, has for several years been intimately associated with, the Committee on Friendly Relations among Foreign Students. This Committee maintains, besides the General Secretary, Mr. C. D. Hurrey, a Spanish-speaking Secretary, and a Secretary for Japanese students.

Mr. Hurrey and his associates are now prepared to serve visitors from different parts of the world with proper credentials, and will answer inquiries concerning educational opportunities in North America, send catalogues and booklets of information, provide letters of introduction and bring persons with special interests in line with objects which will facilitate their study. Furthermore, it is their desire to bring all foreign students and visitors into helpful touch with local Young Men's Christian Associations in the United States and to relate them to respectable homes and other helpful institutions.

They cannot guarantee to find employment for young men, but they will make an earnest effort to discover positions for such as are recommended in special ways. The Committee on Friendly Relations will receive foreign students and distinguished visitors as its guests at the various summer conferences.

Students from India desirous of taking advantage of this opportunity offered by the Young Men's Christian Associations should consult the local Young Men's Christian Associations' Secretaries in India and secure from them letters of introduction. Such letters cannot be given by the local Secretary unless the student has been known to him for a considerable period. Students can, however, be introduced to the Secretary of the Young Men's Christian Association by the Secretary of the local Provincial Advisory Committee. In these times it is particularly important that the Young Men's Christian Association should receive adequate credentials. The Association must know something about the men who are sent to it in order to render the highest service, and therefore it requires full information concerning the persons introduced.

THE IMMIGRATION LAW OF THE UNITED STATES.

It seems advisable for the information of students to reprint the most important part of this law, viz., section 3 of the Immigration Act of 5th February 1917. The italics are ours and draw attention to point of particular interest to Indian students :—

"The following classes of aliens shall be excluded from admission into the United States :—

All idiots, imbeciles, feeble-minded persons, epileptics, insane persons ; persons of constitutional psychopathic inferiority ; persons with chronic alcoholism ; paupers ; professional beggars ; vagrants ; persons afflicted with tuberculosis in any form or with a loathsome or dangerous contagious disease ; persons not comprehended within any of the foregoing excluded classes who are found to be and are certified by the examining surgeon as being mentally or physically defective, such physical defect being of a nature which may affect the ability of such alien to earn a living ; persons who have been convicted of or admit having committed a felony or other crime or misdemeanor involving moral turpitude ; polygamists, or persons who practise polygamy or believe in or advocate the practice of polygamy ; anarchists, or persons who believe in, or advocate the overthrow by force or violence of the Government of the United States, or of all forms of law, or who disbelieve in or are opposed to organize government, or who advocate the assassination of public officials, or who advocate or teach the unlawful destruction of property ; persons who are members of or affilated with any organization entertaining and teaching disbelief in or opposition to organized government, or who advocate or teach the duty, necessity, or propriety of the unlawful assaulting or killing of any officer or officers, either of specific individuals or of officers generally, of the Government of the United States or of any other organized government, because of his or their official character, or who advocate or teach the unlawful destruction of property ; prostitutes, or persons coming into the United States for the purpose of prostitution or for any other immoral purpose ; persons who directly or indirectly procure or attempt to procure or import prostitutes, or persons who are supported by or receive in whole or in part the proceeds of prostitution ; persons hereinafter called contract labourers, who have been induced, assisted, encouraged, or solicited to migrate to this country by offers or promises are true or false, or *in consequence of agreements, oral, written, or*

printed, express or implied, to perform labour in this country of any kind, skilled or unskilled; persons who have come in consequence of advertisements for labourers printed, published, or distributed in a foreign country; *persons likely to become a public charge;* persons who have been deported under any of the provisions of this Act, and who may again seek admission within one year from the date of such deportation, unless prior to their re-embarkation at a foreign port or their attempt to be admitted from foreign contingent territory the Secretary of Labour shall have consented to their reapplying for admission *persons whose ticket or passage is paid for with the money of another, or who are assisted by others* to come, unless it is affirmatively and satisfactorily shown that such persons do not belong to one of the foregoing excluded classes; *persons whose tickets or passage paid for by any corporation, association, society, municipality, or foreign Government, either directly or indirectly;* stowaways, except that any such stowaways, if otherwise admissible, may be admitted at the discretion of the Secretary of Labour; *all children under sixteen years of age,* unaccompanied by or not coming to one or both of their parents, except that any such children may, in the discretion of the Secretary of Labour, be admitted if in his opinion they are not likely to become a public charge and are otherwise eligible, unless otherwise, provided for by existing treaties; persons who are natives of islands not possessed by the United States adjacent to the continent of Asia, situate south of the twentieth parallel latitude north, west of the one hundred and sixtieth meridian of longitude east from Greenwich, and north of the tenth parallel of latitude south, or who are natives of any country, province, or dependency situate on the continent of Asia west of the one hundred and tenth meridian of longitude east from Greenwich and east of the fiftieth meridian of longitude east from Greenwich and south of the fiftieth parallel of latitude north, except that portion of said territory situate between the fiftieth and the sixty-fourth meridians of longitude east from Greenwich and the twenty-fourth and thirty-eighth parallels of latitude north and no alien now in any way excluded from or prevented from entering the United States shall be admitted to the United States. The provision next foregoing, however, shall not apply to persons of the following status or occupation; Government officers, ministers or religious teachers, missionaries, lawyers, physicians, chemists, civil engineers, teachers, *students, authors, artists, merchants, and travellers* for curiosity or pleasure, nor to their legal wives nor their children under sixteen years of age who shall accompany them or who subsequently may apply for admission to the

United States, but *such persons or their legal wives or foreign born children who fail to maintain in the United States a status or occupation placing them within the excepted classes shall be deemed to be in the United States contrary to law*, and shall be subject to deportation as provided in section 19 of this Act."

In a letter to the Secretary, Provincial Advisory Committee, Calcutta, the American Consul : General adds : "As regards your enquiry concerning the amount of money necessary, I may say there is no definite rule laid down in this respect. Students should have a sufficient sum to satisfy the authorities that they will not become a public charge or they should have some responsible person in the United States to vouch for them in this respect".

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